

What is Claimed:

- 1 1. An optoelectronic device, comprising:
2 a doped layer; and
3 a dopant barrier having at least two layers between said doped layer and a
4 layer, said dopant barrier not forming a pn junction with said doped layer.
- 1 2. An optoelectronic device as recited in claim 1, wherein said at least two
2 layers further comprise a first dopant barrier layer and a second dopant barrier layer.
- 1 3. An optoelectronic device as recited in claim 2, wherein said layer is a
2 current confinement layer.
- 1 4. An optoelectronic device as recited in claim 1, wherein said layer is a
2 substrate.
- 1 5. An optoelectronic device as recited in claim 3, wherein said first dopant
2 barrier layer is adjacent said current confinement layer and said second dopant barrier
3 layer is adjacent said doped layer.
- 1 6. An optoelectronic device as recited in claim 5, wherein said first dopant
2 barrier layer is n-InP and said second dopant barrier layer is undoped InAlAs.
- 1 7. An optoelectronic device as recited in claim 6, wherein said current
2 confinement layer is InP(Fe).
- 1 8. An optoelectronic device as recited in claim 1, wherein said layer is
2 undoped InAlAs.
- 1 9. An optoelectronic device as recited in claim 3, wherein said current
2 confinement layer is disposed on either side of a mesa.
- 1 10. An optoelectronic device as recited in claim 1, wherein said doped
2 layer is a substrate and said layer is a semi-insulating layer.
- 1 11. An optoelectronic device, comprising:
2 a mesa having a substrate, a first dopant barrier having at least two layers
3 disposed over said substrate; and
4 at least one layer disposed over said dopant barrier, said dopant barrier not
5 forming a p-n junction with said substrate or said at least one layer.

1 12. An optoelectronic device as recited in claim 11, wherein a second
2 dopant barrier is disposed between said mesa and a current confinement layer.

1 13. An optoelectronic device as recited in claim 12, wherein said second
2 dopant barrier further comprises a first layer and a second layer.

1 14. An optoelectronic device as recited in claim 12, wherein said first
2 layer is adjacent said current confinement layer and said second layer is adjacent said
3 mesa.

1 15. An optoelectronic device as recited in claim 14, wherein said second
2 layer does not form a pn junction with said substrate of said at least one layer.

1 16. An optoelectronic device as recited in claim 11, wherein said one of
2 said at least two layers is undoped InAlAs.

1 17. An optoelectronic device as recited in claim 12, wherein said second
2 dopant barrier includes a layer of InAlAs.

1 18. An optoelectronic device as recited in claim 12, wherein said second
2 dopant barrier includes a layer of n-InP.

1 19. An optoelectronic device as recited in claim 12, wherein said current
2 confinement layer is InP(Fe) and one of said at least one layers is p-doped InP.

1 20. An optoelectronic device as recited in claim 19, wherein said p-doped
2 InP is doped with Zn.